

Bio 264 Homework #3

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Create a new markdown file called `<Your last name>_HW#3_22Feb2016`. Cut and paste the problems below into Markdown, then add chunks of R code to provide your answers. You will turn in both the `.Rmd` and the `.html` file for this homework assignment.

1. Create a function that takes as input an integer value n . Inside your function, create a square $n \times n$ matrix and fill it with zeroes. Now replace the diagonal elements with 1s. The function should print the matrix. If you have done this correctly, the 1s should form a visual pattern of an “x” that extends to the 4 corners of the square matrix.
 - Try to do this exercise using a `for` loop.
 - Hunt around on line or in the help system and see if you can use some of R’s matrix functions to achieve the same thing.
2. The most basic equation of all is a straight line:

$$Y = a + bX$$

where Y is the “dependent variable”, X is the “independent variable”, and a and b are the constants.

- Using the methods we have developed in class, create a graphic function for examining this linear relationship and illustrate it with different settings for the two parameters. What is the interpretation of the parameters a and b
- Use this as an opportunity to explore the many options that are available in `par`, and `plot` (or `matplot`). Spiff up your margins, labels, and graphs so they look sharp!